1984

PS-X5

US Model

AUTOMATIC STEREO TURNTABLE SYSTEM

Cartridge is not supplied with this turntable system.

SPECIFICATIONS

GENERAL

Power Requirements:	120V ac, 60Hz
Power Consumption:	8W
Dimensions:	Approx. 445(w) x 150(h) x 375(d) mm 17 ½ (w) x 5⅞ (h) x 14¾ (d) inches including projecting parts and controls
Weight:	Approx. 10.3 kg (22 lb 12 oz), net Approx. 12.1 kg (26 lb 11 oz), in shipping carton

TURNTABLE

Platter:	31.7 cm (12½ inches), aluminum-alloy diecast
Motor:	DC servo-controlled motor (brushless and slotless)
Drive System:	Direct drive, crystal lock control system
Speed:	33⅓ rpm, 45 rpm
Starting Characteristics:	Comes to nominal speed within a third revolution (33⅓ rpm)
Wow and Flutter:	±0.045% (DIN) 0.025% (WRMS)
S/N Ratio:	73 dB (DIN-B)
Initial Drift:	Within 0.0003%
Load Characteristics:	0% at 150g tracking force
Speed Deviation:	Within 0.003%
Automatic System:	Lead-in, return, reject, repeat

TONEARM

Type:	Statically balanced, universal
Pivot-to-Stylus Length:	216.5 mm (8 ½ inches)
Overall Arm Length:	300 mm (11⅞ inches)
Overhang:	16.5 mm (21/32 inches)
Tracking Error:	+3°, −1°
Tracking-Force Adjustment Range:	0 – 3 g
Shell Weight:	10.5g
Cartridge Weight Range:	2.5 – 9.5 g 8 – 14.5 g (with extra weight)

PSX5

SAFETY-RELATED COMPONENT WARNING!!

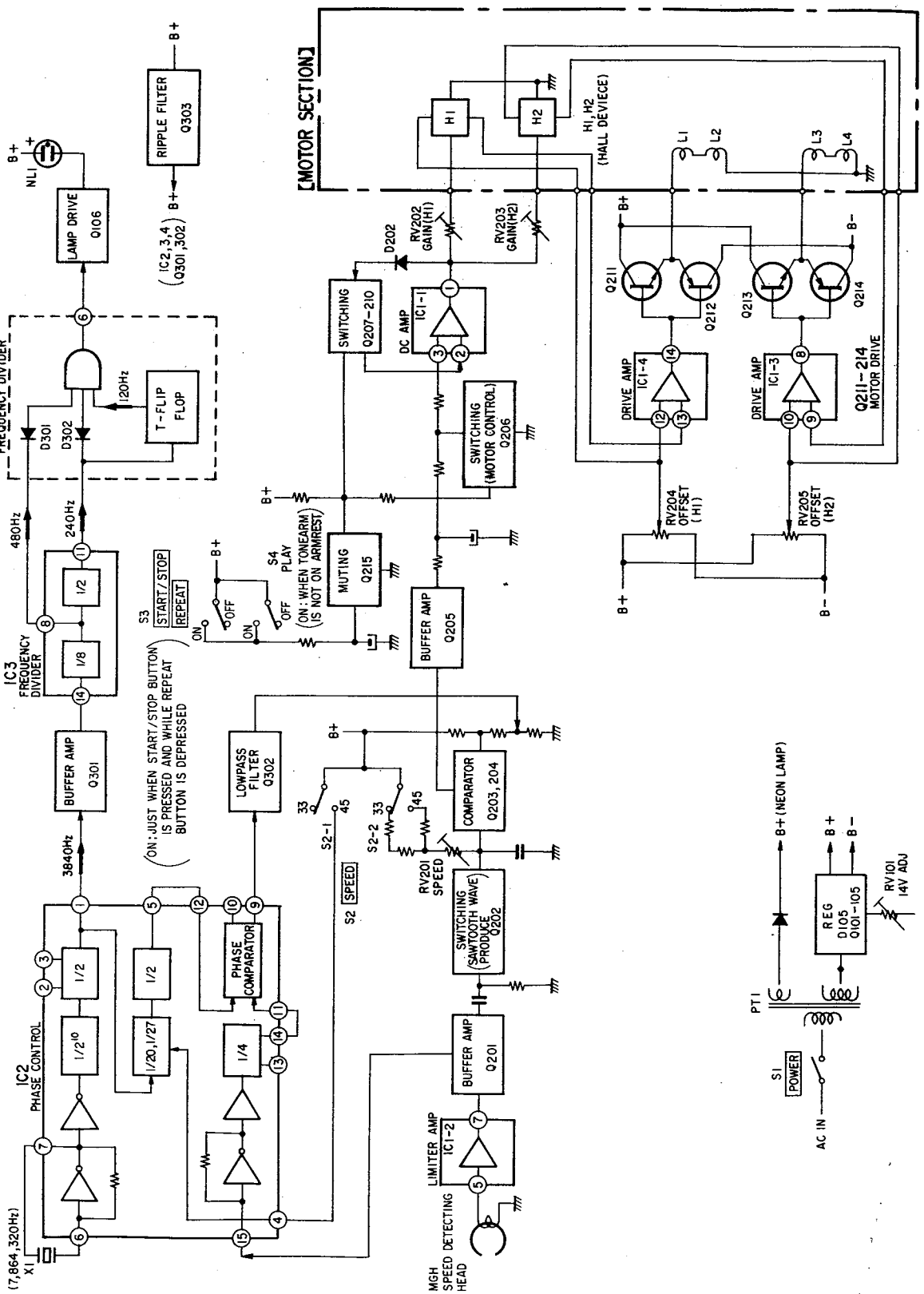
COMPONENTS IDENTIFIED BY SHADING ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SONY®

SERVICE MANUAL

SECTION 1
OUTLINE

1-1. BLOCK DIAGRAM

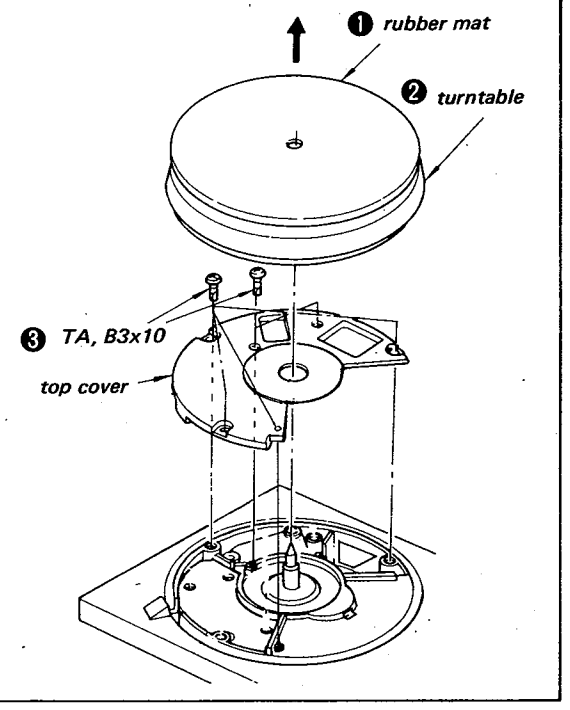


SECTION 2
DISASSEMBLY AND REPLACEMENT

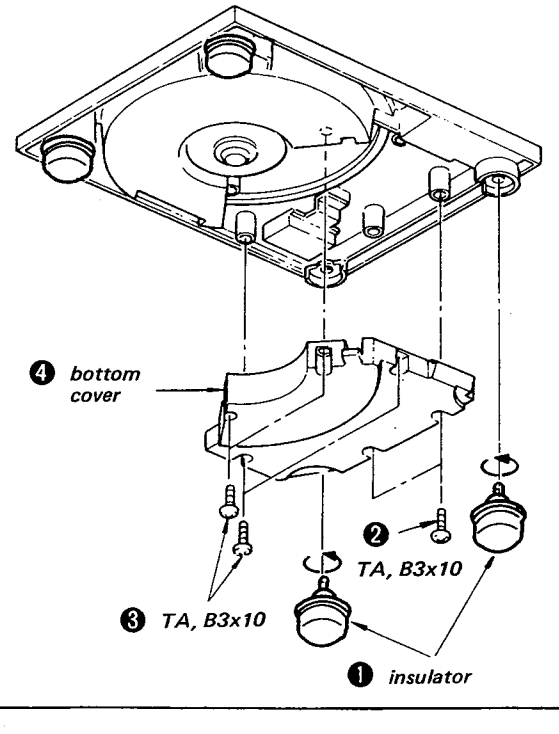
2-1. REMOVAL

Remove the parts in the numerical order.

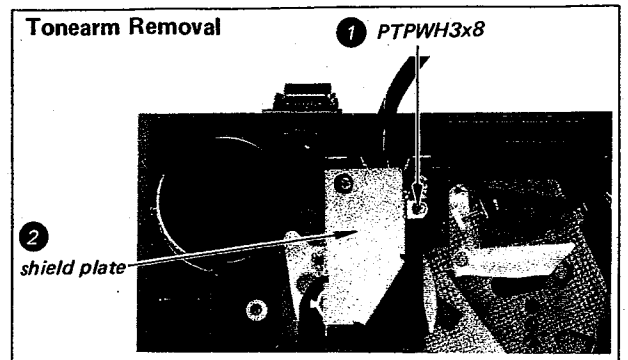
Top Cover Removal

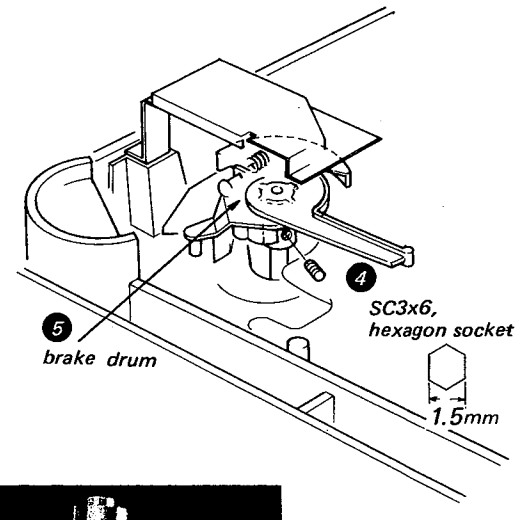


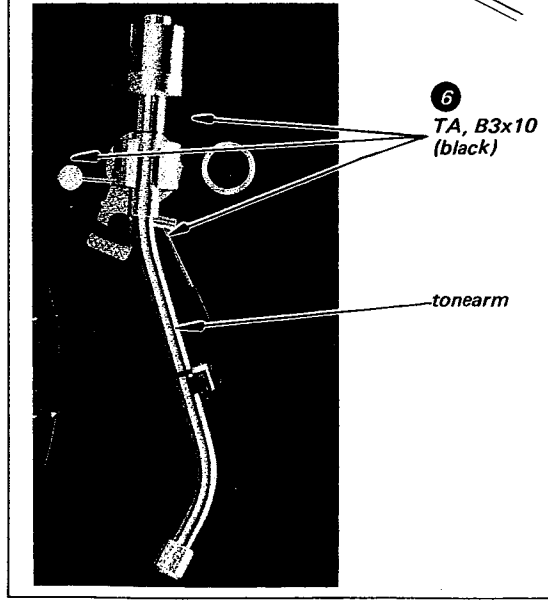
Bottom Cover Removal



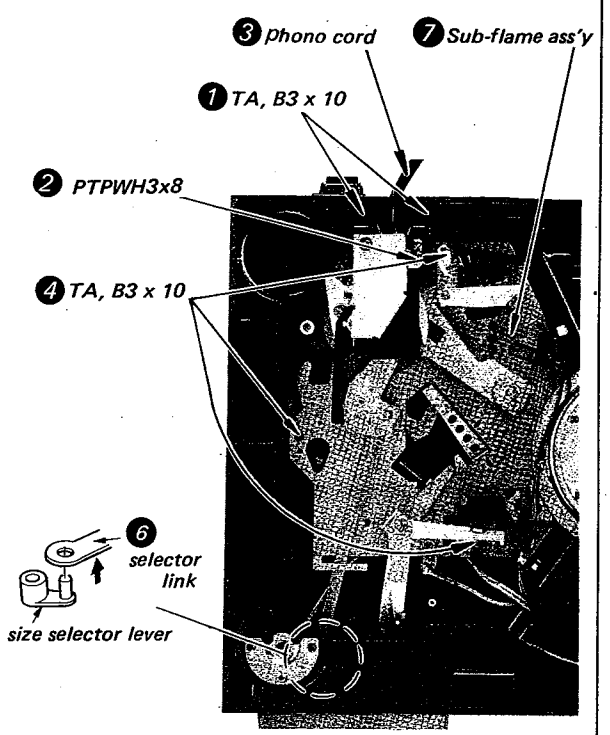
Tonearm Removal

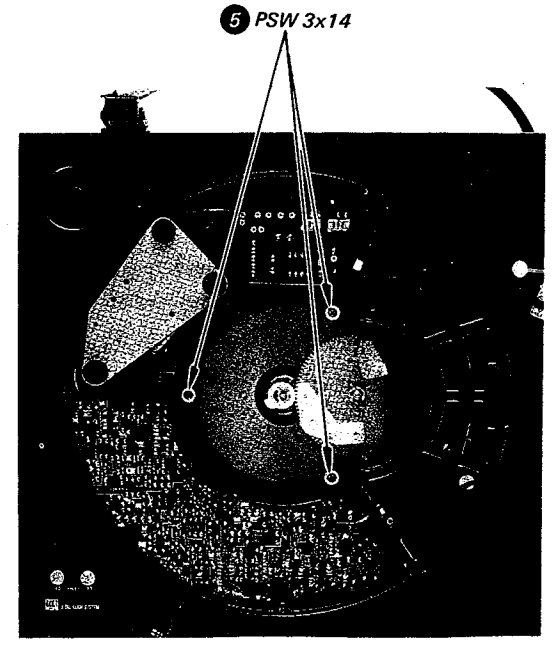




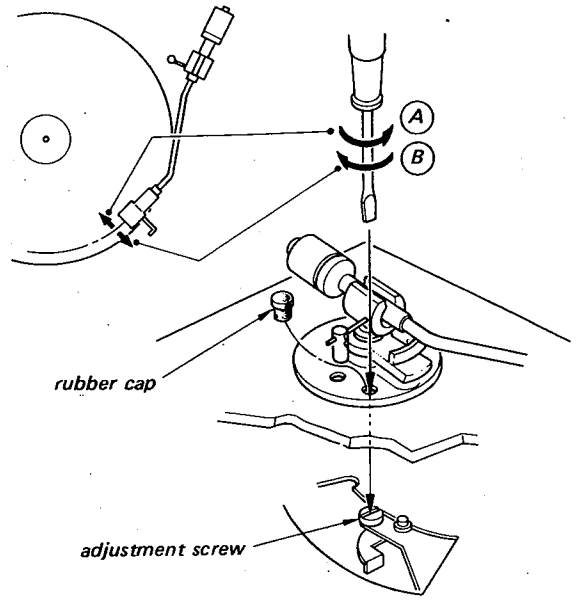


Sub-flame Ass'y Removal





Stylus Drop-point Adjustment



1. Set the record size selector lever to the 30 (12") position and make sure that the stylus gets down on the specified point of the test record.

   test record: YFSC-16

Record size selector lever position	Count of drop-point
30 (12")	4 to 16
25 (10")	6 to 24
17 (7")	7 to 25

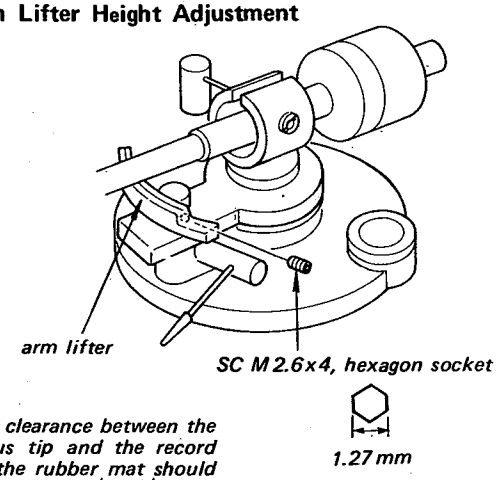
2. If necessary, insert the screw-driver into the hole and adjust the drop-point by turning the adjustment screw.

   To change the drop-point inward:
   Turn the adjustment screw slightly counterclockwise (A)
   To change the drop-point outward:
   Turn the adjustment screw slightly clockwise (B)

3. Once it is properly adjusted with a 30 cm (12") record, the drop-point will be correct for 17 cm (7") and 25 cm (10") records as well.

Note: The stylus drop-point is changed to about 12 mm (½") by one turn of the adjustment screw.

Arm Lifter Height Adjustment

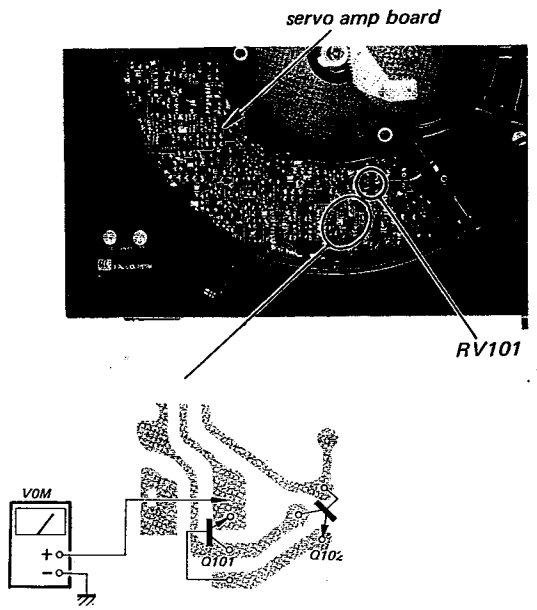


The clearance between the stylus tip and the record on the rubber mat should be 5–9 mm (3/16–3/8").

3-2. ELECTRICAL ADJUSTMENTS

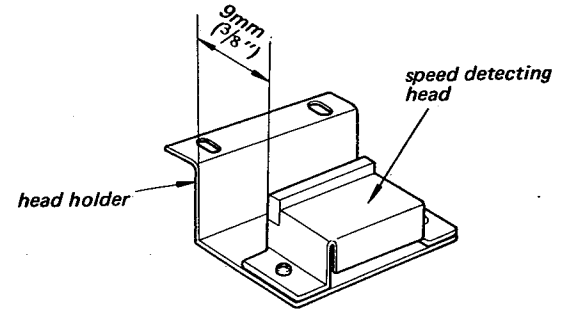
B+ (14V) Adjustment

Adjust RV101 for 14V reading on VOM.

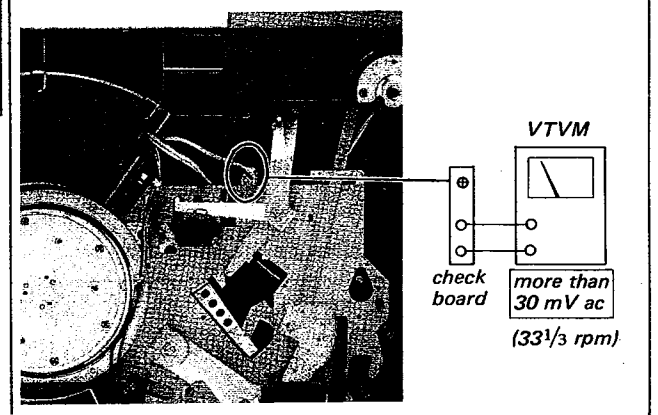


Speed Detecting Head Output Lever Adjustment

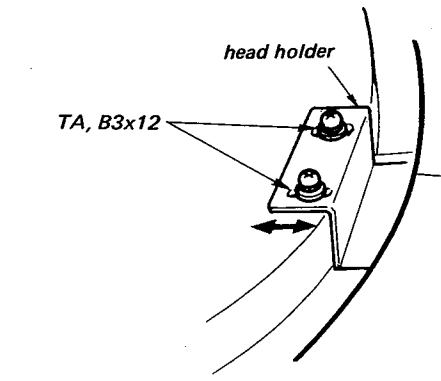
Before this adjustment, set the speed detecting head on the head holder as shown below.

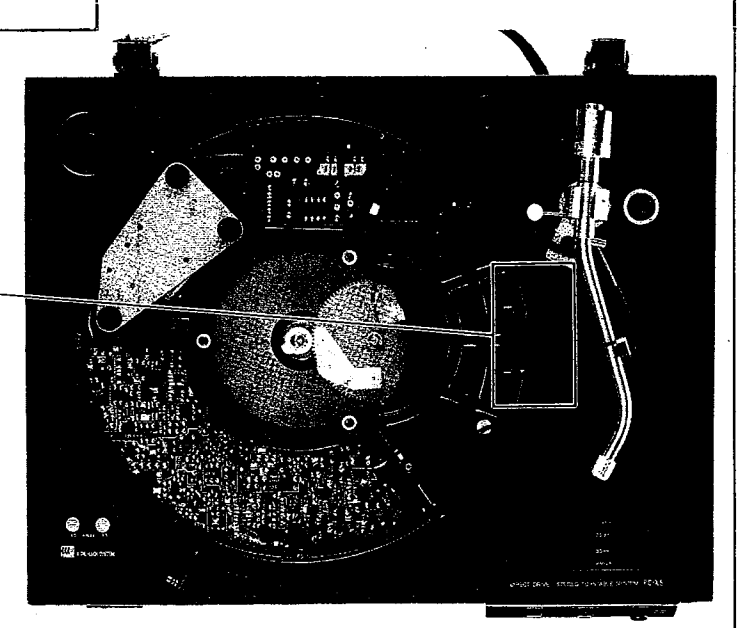


1. Adjust the position of the head holder so that the VTVM reading is more than 30 mVac at 33⅓ rpm.
2. Make sure that the head does not touch the turntable and tighten the screws securely.



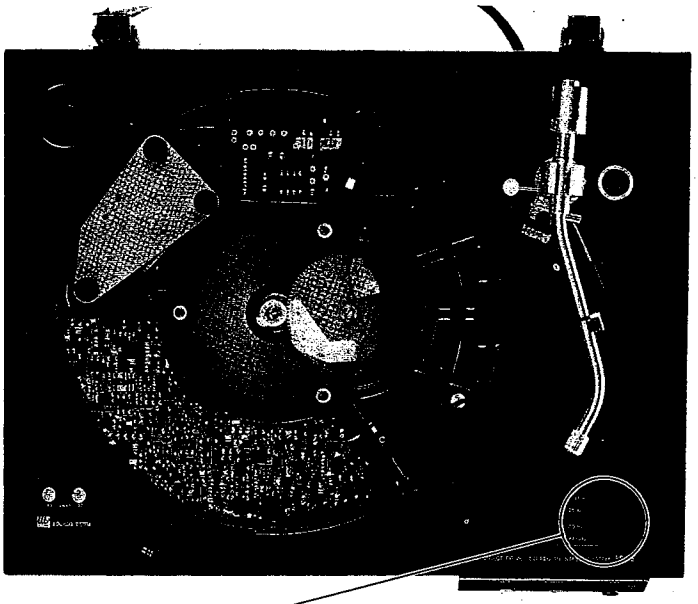
Adjustment Location:





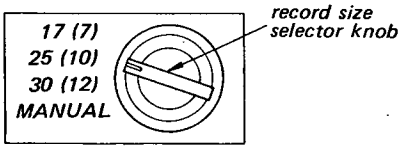
Note: The clearance between the magnet coated rim and the speed detecting head is more than 0.3 mm.

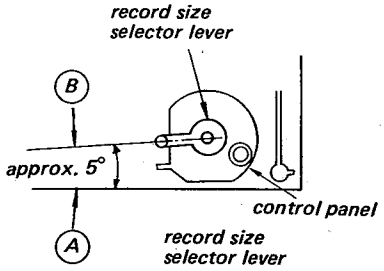
2-2. CAUTION FOR INSTALLATION

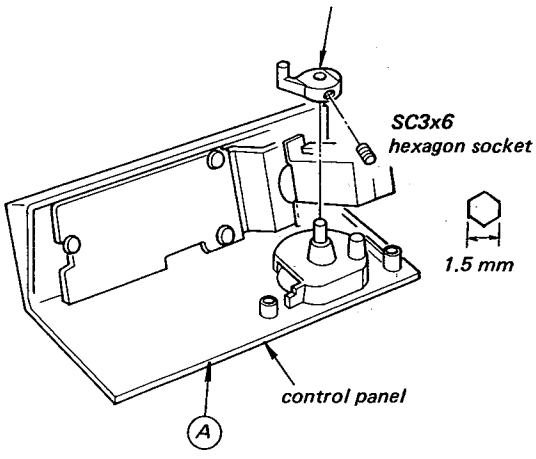


Record Size Selector Lever Installation

1. *Set the record size selector knob to the 25 (10) position.*
2. *Install and set the record size selector lever as shown below.*







3. *Set the record size selector knob to the MANUAL position and, when touching the start/stop switch, make sure that the tonearm does not move.*

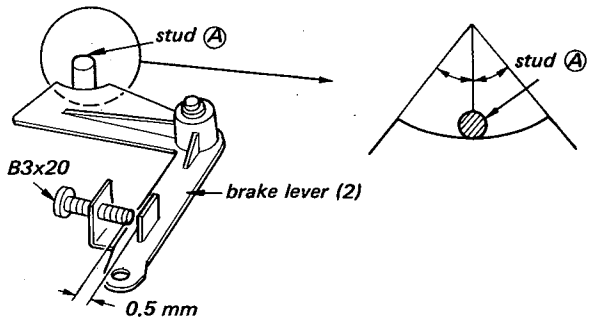
SECTION 3
ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS

Brake Lever Position Adjustment

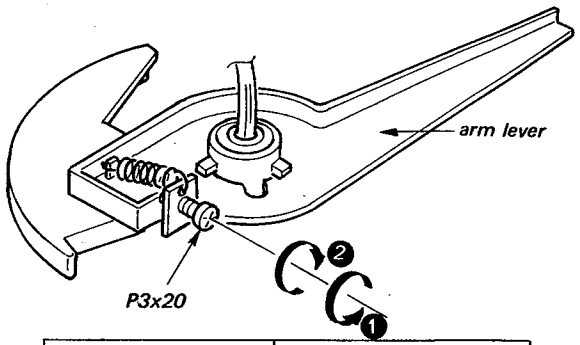
Before the adjustment, remove the top and bottom covers.

1. Rotate the drive gear and position the stud Ⓐ as shown below.
2. Turn the adjustment screw (B3x20) as shown below.
3. Make sure that the tonearm moves smoothly.



Automatic Return Adjustment

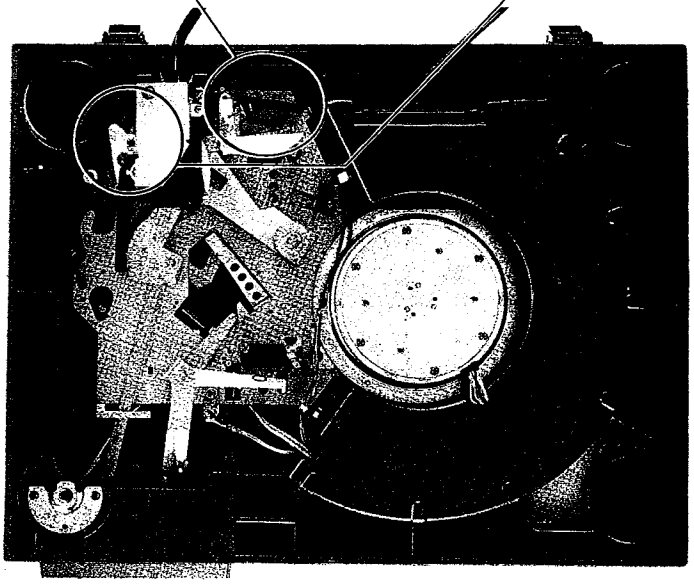
If the automatic return operation does not work properly, adjust by turning the adjustment screw (P3x20) as shown below.



Turning direction	Automatic return position
❶ ↕ ❷	fast ↕ slow

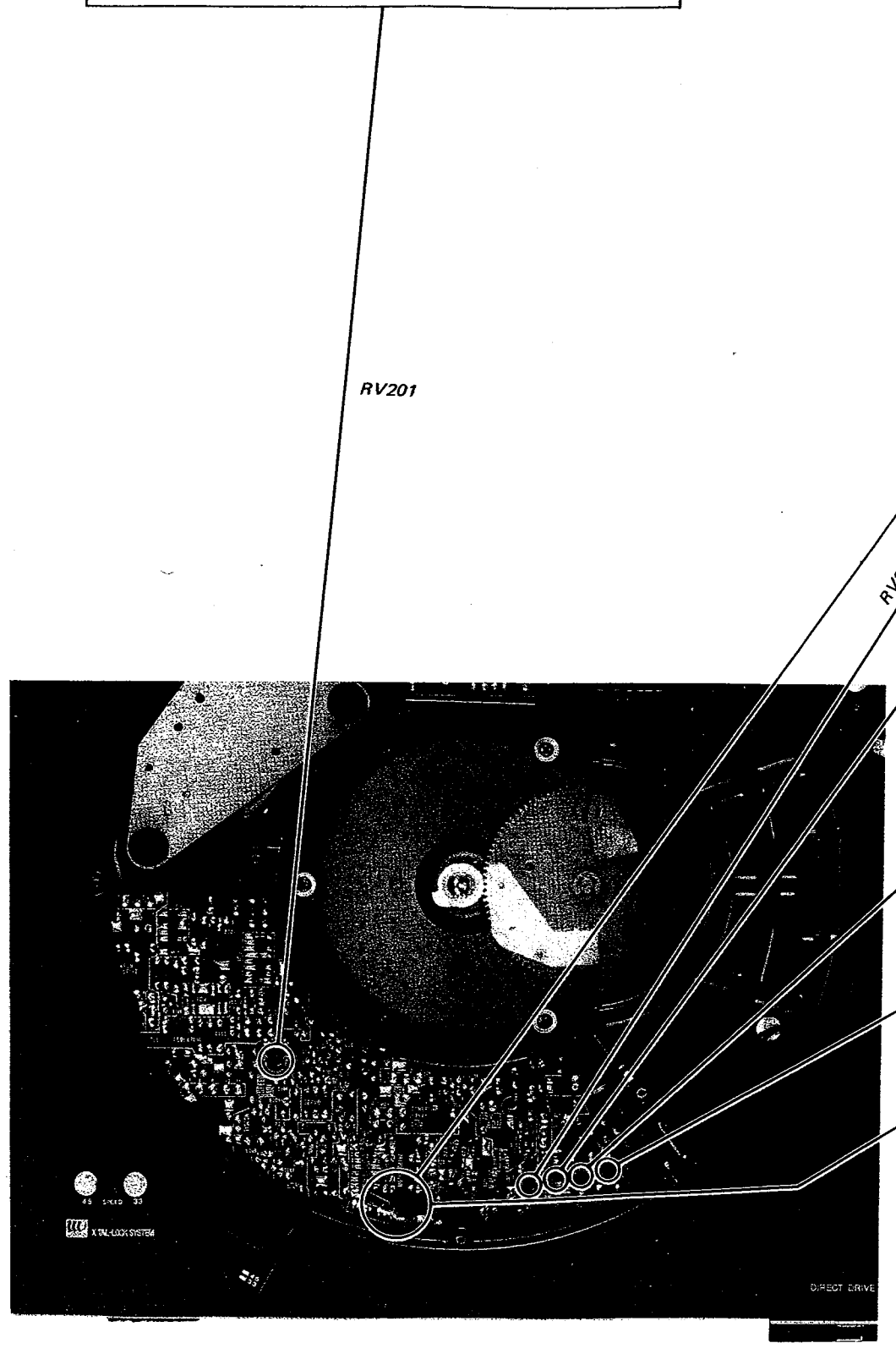
Test record: YFSC-16 A sice "C-2"

Count of automatic return: 4 to 14



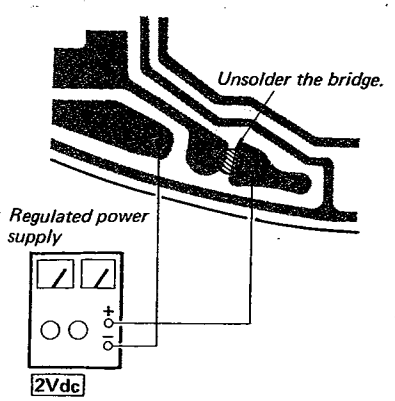
Turntable Speed Adjustment (33$^1/_3$ or 45 rpm)

Adjust RV201 so that the stroboscope pattern appears stationary.

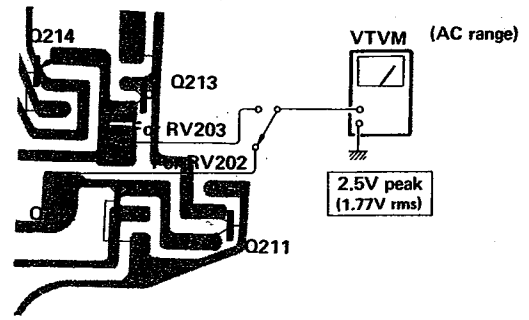


Hall Device Gain Adjustment (33$^1/_3$ rpm)

1. Unsolder the bridge and connect the regulated power supply as shown below.

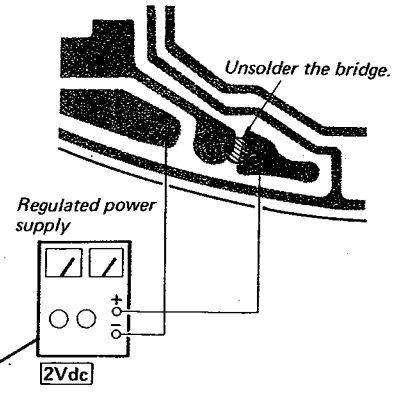


2. Connect VTVM to the emitter of Q211, Q212 and adjust RV202 for 2.5V peak (1.77V rms) reading on VTVM.
3. Connect VTVM to the emitter of Q213, Q214 and adjust RV203 for 2.5V peak (1.77V rms) reading on VTVM.



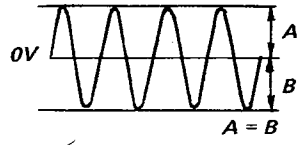
Drive Amp Offset Adjustment (33$^1/_3$ rpm)

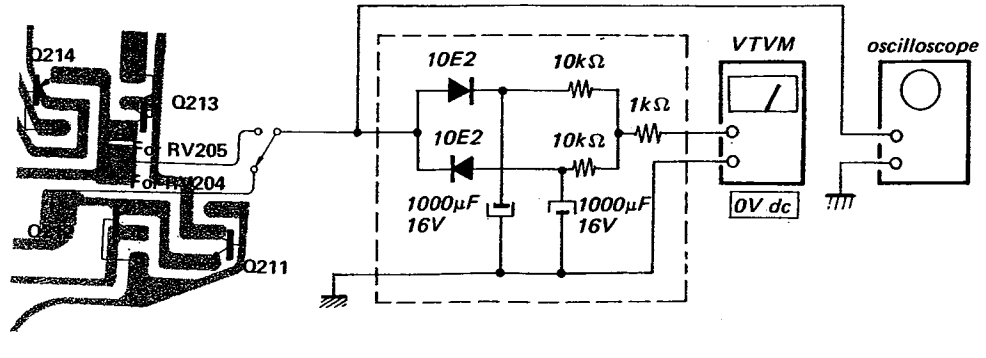
2. Unsolder the bridge and connect the regulated power supply as shown below.



2. Connect VTVM or oscilloscope to the emitter of Q211, Q212 and adjust RV204 for 0V dc VTVM reading or the waveform on oscilloscope as shown below.
3. Connect VTVM or oscilloscope to the emitter of Q213, Q214 and adjust RV205 for 0V dc VTVM reading or the waveform on oscilloscope as shown below.

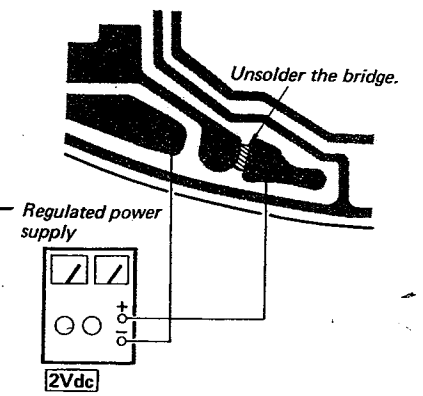
Note: Set the sweep time long for easy checking of the waveform.



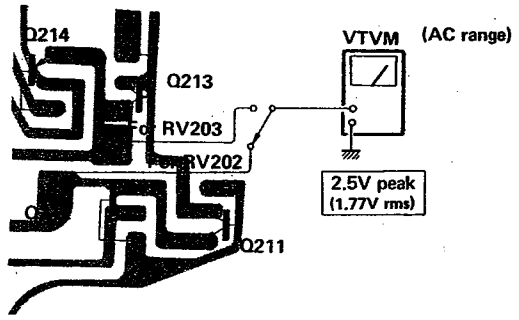


Hall Device Gain Adjustment (33$^1/_3$ rpm)

1. Unsolder the bridge and connect the regulated power supply as shown below.

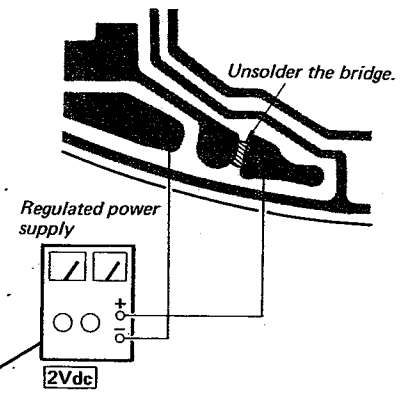


2. Connect VTVM to the emitter of Q211, Q212 and adjust RV202 for 2.5V peak (1.77V rms) reading on VTVM.
3. Connect VTVM to the emitter of Q213, Q214 and adjust RV203 for 2.5V peak (1.77V rms) reading on VTVM.



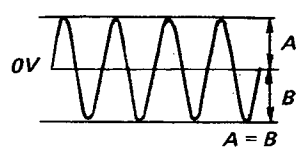
Drive Amp Offset Adjustment (33$^1/_3$ rpm)

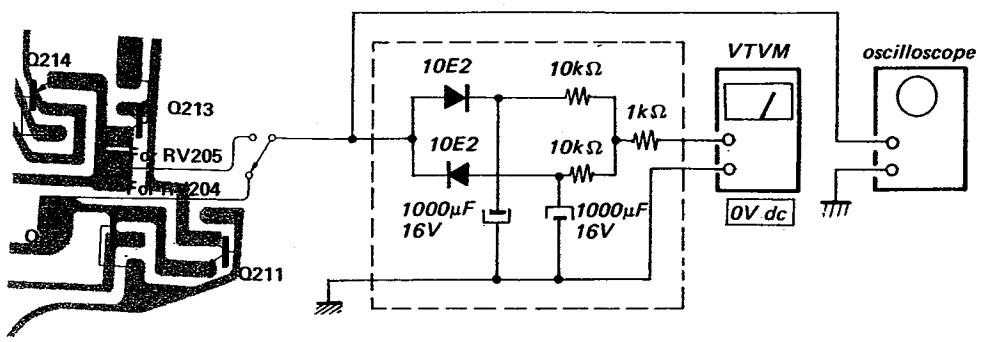
2. Unsolder the bridge and connect the regulated power supply as shown below.



2. Connect VTVM or oscilloscope to the emitter of Q211, Q212 and adjust RV204 for 0V dc VTVM reading or the waveform on oscilloscope as shown below.
3. Connect VTVM or oscilloscope to the emitter of Q213, Q214 and adjust RV205 for 0V dc VTVM reading or the waveform on oscilloscope as shown below.

Note: Set the sweep time long for easy checking of the waveform.





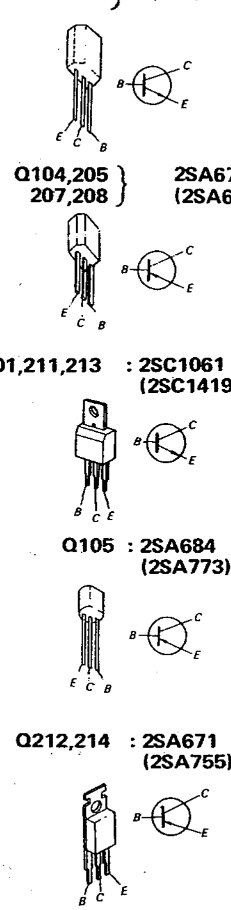
SECTION 4 DIAGRAMS

4-1. MOUNTING DIAGRAM – *Conductor Side* –

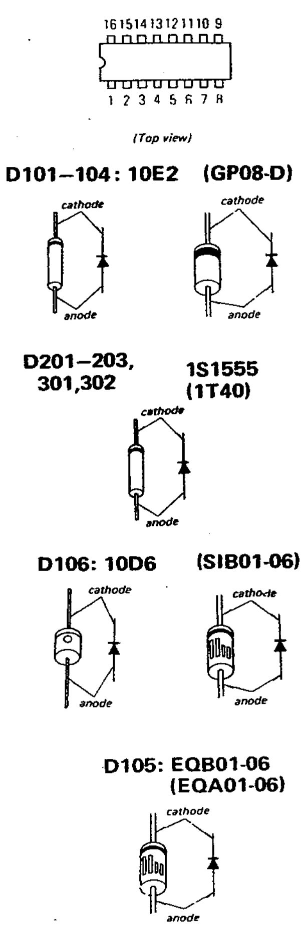
Replacement Semiconductors

For replacement, use semiconductors except in ( ).

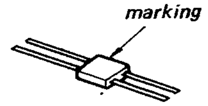
Q106 : 2SC926A
Q102,103,201–204, 206,209,210,215 301~303 : 2SC634A (2SC633A)
Q104,205 207,208 : 2SA678 (2SA677)
Q101,211,213 : 2SC1061 (2SC1419)
Q105 : 2SA684 (2SA773)
Q212,214 : 2SA671 (2SA755)



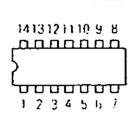
IC2 : MSM 5811
D101–104 : 10E2 (GP08-D)
D201–203, 301,302 : 1S1555 (1T40)
D106: 10D6 (SIB01-06)
D105: EQB01-06 (EQA01-06)



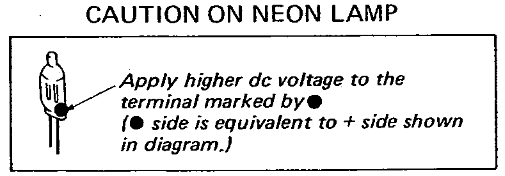
H1,2 : 5GF-MS-07F



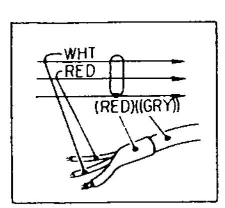
IC1 : µPC324C
IC3 : M53293P (SN7493AN)
IC4 : M53200P (SN7400N)



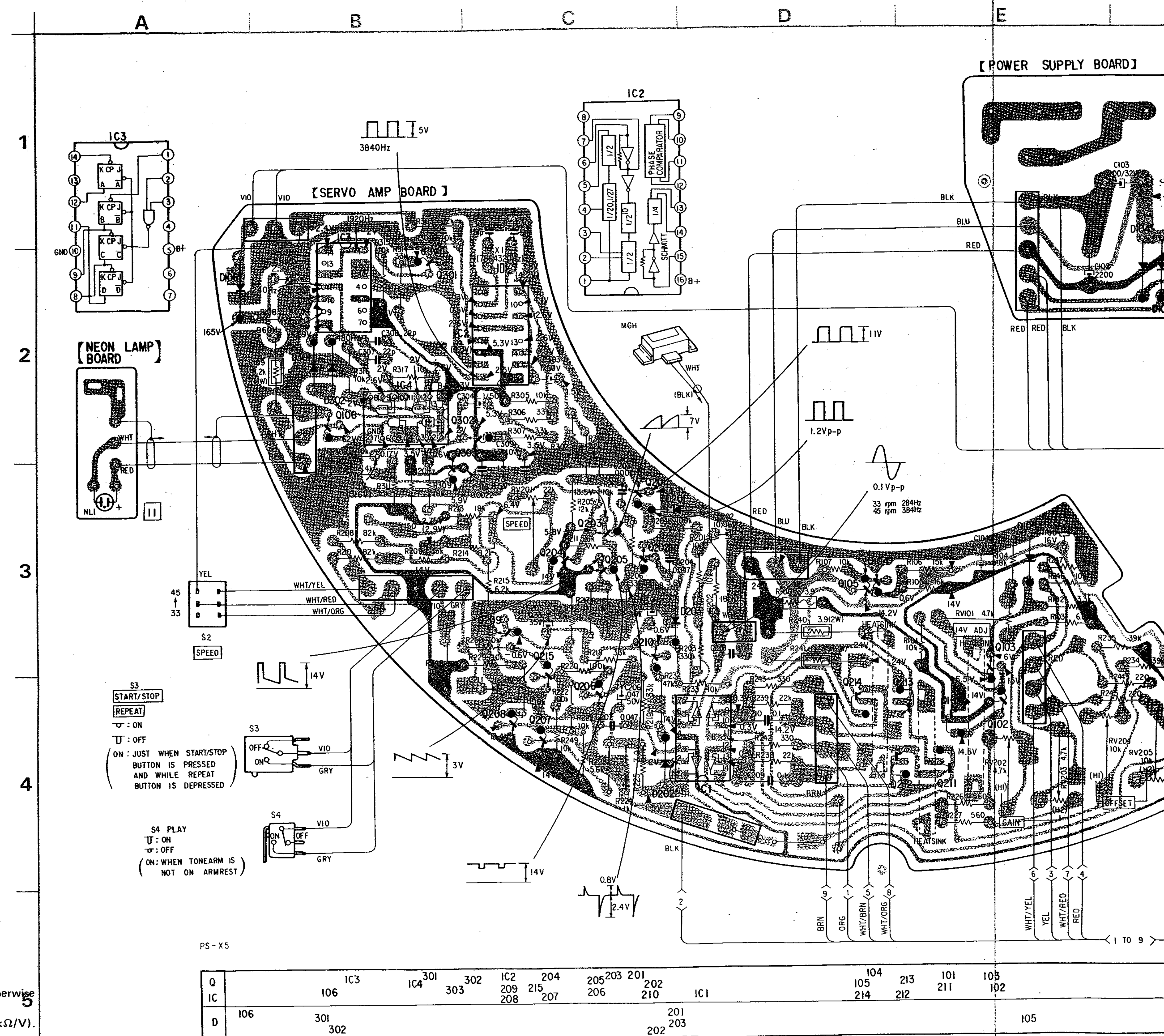
CAUTION ON NEON LAMP



- Color code of sleeving over the end of the jacket.

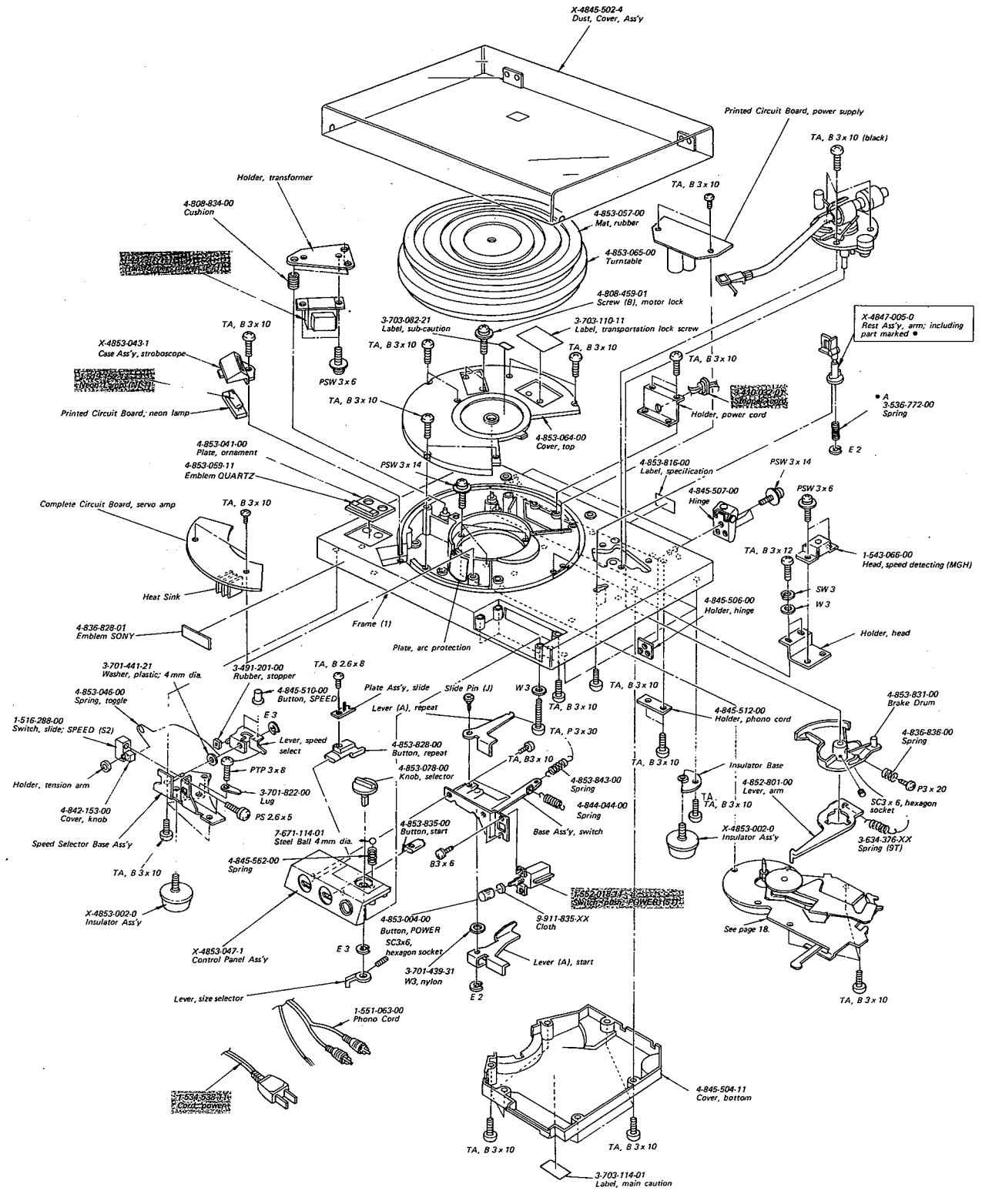


- ○—: parts extracted from the component side.
- ●—: parts extracted from the conductor side.
- ▓ : B+ pattern
- ░ : B– pattern
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken at 33 rpm with a VOM (20kΩ/V). ( ) : 45 rpm



SECTION 5
EXPLODED VIEWS

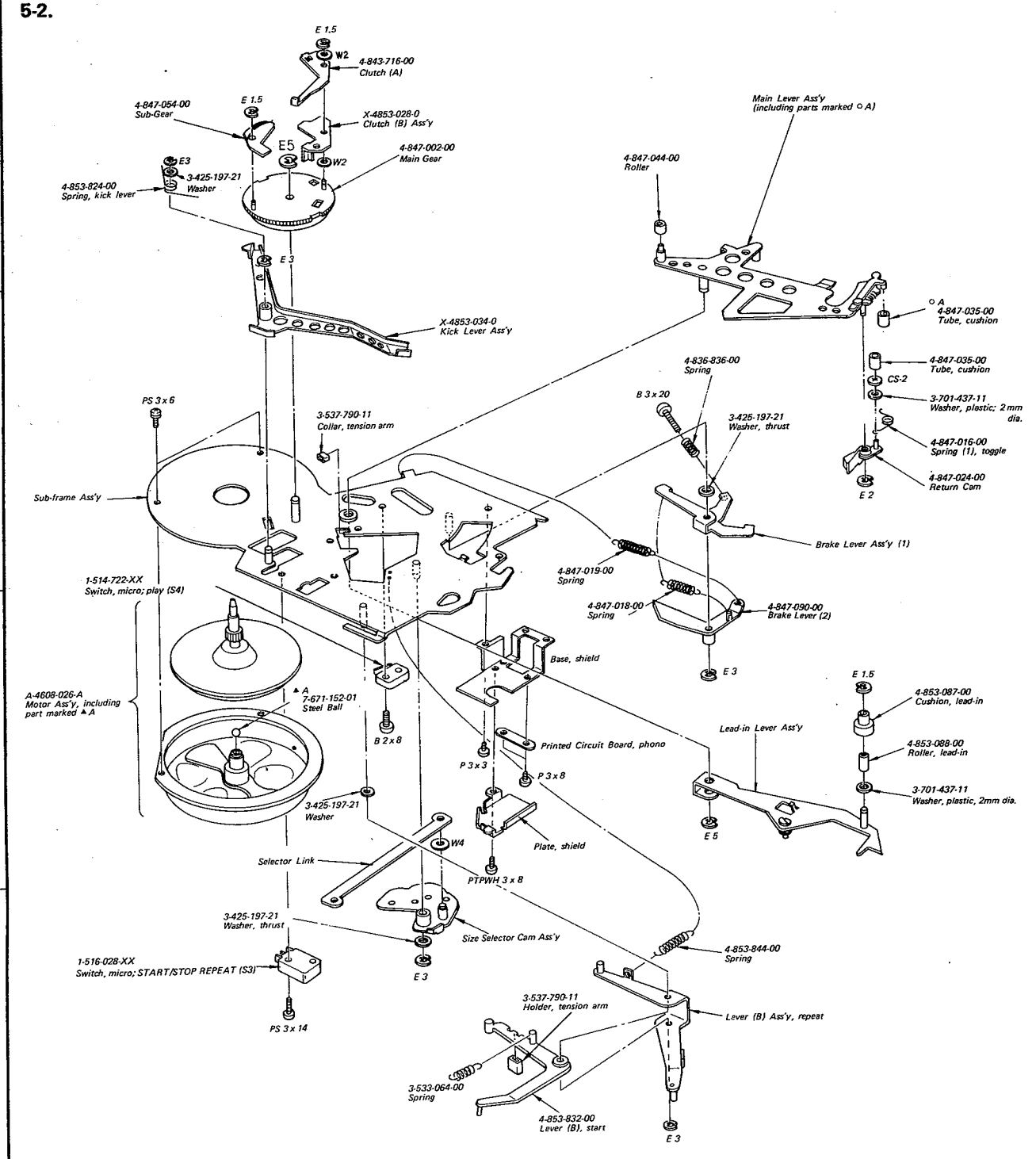
5-1.



Note:
- o Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- o All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head.

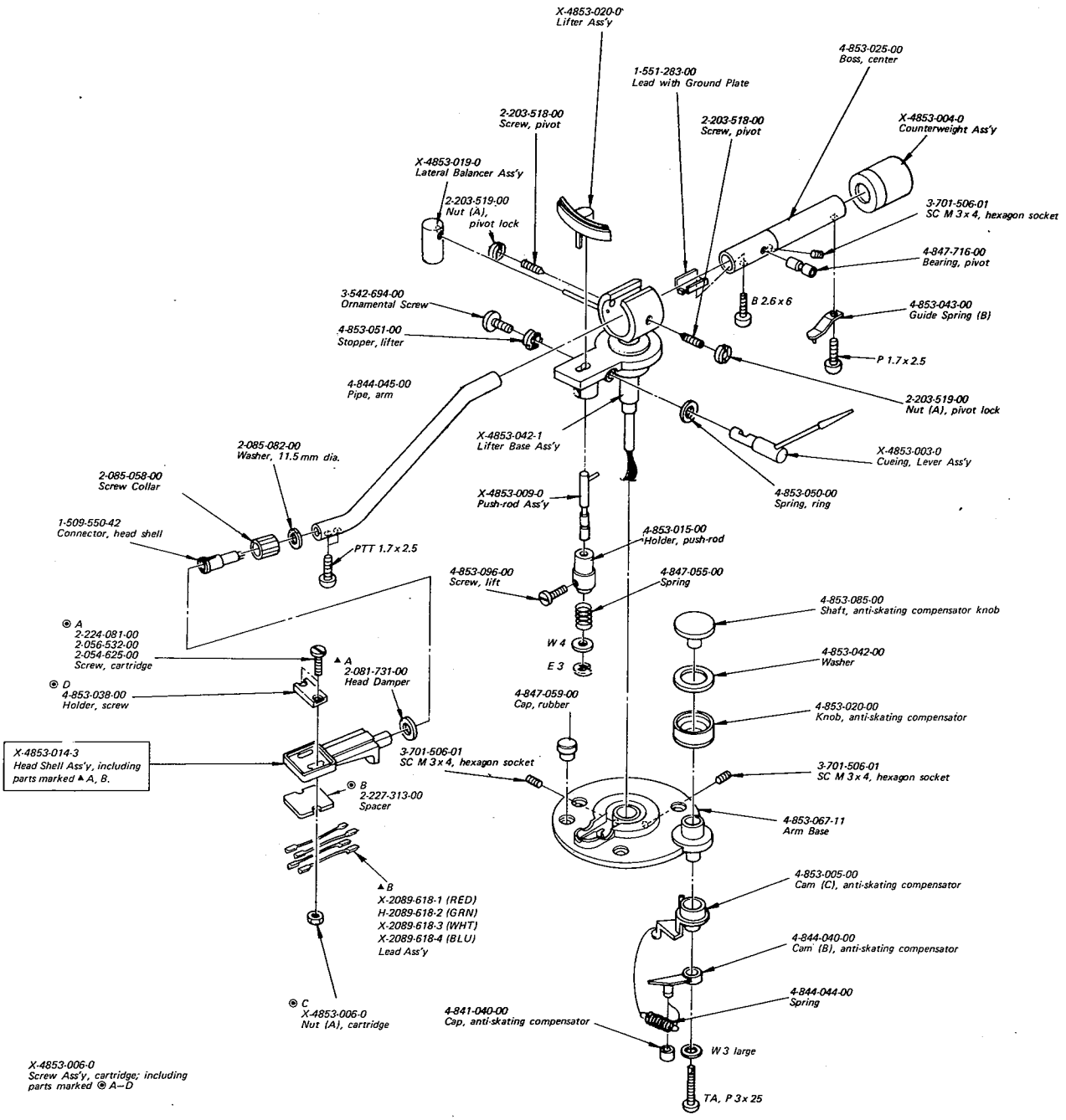
Note: The components identified by shading are critical for safety. Replace only with part number specified.

5-2.



Note:
- o Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- o All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head.

5.3



Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.

SECTION 6
ELECTRICAL PARTS LIST

SEMICONDUCTORS

Transistors

	Ref. No.	*Description*
⇒	Q101	2SC1061
⇒	Q102,202	2SC634A
⇒	Q103,203	2SC634A
⇒	Q104	2SA678
⇒	Q105	2SA684
	Q106	2SC926A
⇒	Q201–204	2SC634A
⇒	Q205	2SA678
⇒	Q206	2SC634A
⇒	Q207,208	2SA678
⇒	Q209,210	2SC634A
⇒	Q211	2SC1061
⇒	Q212	2SA671
⇒	Q213	2SC1061
⇒	Q214	2SA671
⇒	Q215	2SC634A
⇒	Q301 ~ 303	2SC634A

ICs

	Ref. No.	*Description*
	IC1	μPC324C
	IC2	MSM5811
⇒	IC3	M53293P
⇒	IC4	M53200P

Diodes

	Ref. No.	*Description*
⇒	D101–104	10E2
⇒	D105	EQB01-06
⇒	D106	10D6
⇒	D201–203	1S1555
⇒	D301,302	1S1555
	H1,2	5GF-MS-07F

CAPACITORS

All capacitors are in μF and ceramic unless otherwise noted.
50WV or less are not indicated except for electrolytics. pF = μμF, elect = electrolytic

Ref. No.	*Part No.*	*Description*		
C101	1-108-750-12	0.033	125V	mylar
C102,103	1-123-047-11	2200	35V	elect
C104,105	1-123-193-11	100	16V	elect
C106	1-123-027-11	2.2	250V	elect
C201	1-101-925-11	0.047		
C202	1-121-651-11	10	16V	elect
C203	1-102-074-11	0.001		
C204	1-108-246-12	0.047		mylar
C205	1-131-212-11	0.33	35V	tantalum
C206	1-121-951-11	0.47	50V	elect
C207	1-101-925-11	0.047		
C208	1-123-191-11	22	16V	elect
C209,210	1-108-251-12	0.1		mylar
C211	1-121-391-11	1	50V	elect
C301,302	1-102-491-11	51p		
C303	1-121-391-11	1	50V	elect
C304	1-121-952-11	1	50V	elect
C305	1-101-925-11	0.047		
C307,308	1-102-959-11	22p		
C309	1-123-194-11	33	10V	elect
C310	1-101-919-11	0.0022		

RESISTORS

All resistors are in ohms. Common ¼W carbon resistors are omitted.
Check schematic diagram for values.

Ref. No.	*Part No.*	*Description*		
R109	1-213-154-11	8.2k	1W	metal oxide
R240,241	1-206-453-11	3.9	2W	metal oxide
RV101	1-244-644-XX	47 k, adjustable		
RV201	1-244-646-XX	22 k, variable		

⇒: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

Note: The components identified by shading are critical for safety. Replace only with part number specified.

Ref. No.	*Part No.*	*Description*
RV202,203	1-244-644-XX	47 k, adjustable
RV204,205	1-244-645-XX	10 k, adjustable

SWITCHES

[illegible]	[illegible]	POWER
S2	1-516-288-00	SPEED
S3	1-516-028-XX	START/STOP, REPEAT
S4	1-514-722-XX	Play

MISCELLANEOUS

MGH	1-543-066-00	Head, speed detecting
[illegible]	[illegible]	Cord, power
[illegible]	[illegible]	Neon Lamp, 100 V, 10mA
[illegible]	[illegible]	Transformer, power
	1-509-550-00	Connector, head shell
	1-527-304-00	Crystal 7.864320 MHz
	1-551-063-00	Cord, phono
	X-2089-618-1	Lead Wire with Terminal (red)
	X-2089-618-2	Lead Wire with Terminal (green)
	X-2089-618-3	Lead Wire with Terminal (white)
	X-2089-618-4	Lead Wire with Terminal (blue)
	1-551-283-00	Lead with Ground Plate

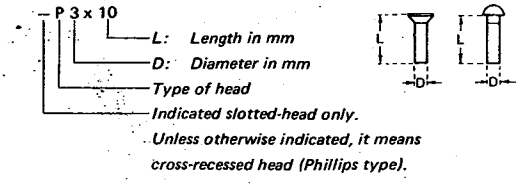
ACCESSORIES & PACKING MATERIALS

Part No.	*Description*
X-4853-006-0	Screw Ass'y, cartridge
including;	
2-054-625-00	Screw (C), cartridge
2-056-532-00	Screw (A), cartridge
2-224-081-00	Screw (E), cartridge
2-227-313-00	Spacer
4-815-655-01	Nut, cartridge
4-853-038-01	Holder, screw
3-701-613-00	Bag, plastic
3-701-614-00	Bag, plastic
3-701-630-00	Bag, plastic
3-701-806-02	Adaptor, 45 rpm
3-770-347-21	Manual, instruction
3-793-395-14	Gage, tracking error check
3-849-790-00	Bag, protection
4-844-060-00	Bag, protection
4-847-092-00	Driver
4-848-002-00	Cushion, arm pipe
4-848-005-00	Box, accessory
4-848-006-00	Bag, accessory
4-848-012-00	Plate, protection
4-853-836-00	Cushion
4-853-839-00	Frame
4-853-846-00	Carton

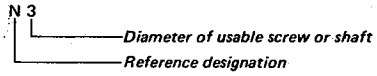
Note: The components identified by shading are critical for safety. Replace only with part number specified.

HARDWARE NOMENCLATURE

Screw:



Nut, Washer, Retaining ring:



Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip-type retaining ring	

Sony Corporation